

ABSTRACT

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The present invention includes an advanced MOSFET design and manufacturing approach that allow further increase in IC packing density by appropriately addressing the increased leakage problems associated with it. The MOSFET according to one embodiment of the present invention includes a gate, source/drain diffusion regions on opposite sides of the 10 gate, and source/drain extensions adjacent the source/drain diffusion regions. The MOSFET also includes at least one added corner diffusion region that overlaps with at least a portion of a source/drain extension region for reducing off-state leakage currents. The corner diffusions can be created using conventional CMOS IC fabrication processes with some modification of an ion implant mask used in manufacturing a conventional CMOS IC.

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